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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,656	01/22/2004	John S. Wheat	8540P-000185	5141

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EXAMINER	
CHUO, TONY SHENG HSIANG	
ART UNIT	PAPER NUMBER
1745	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/762,656	WHEAT ET AL.	
	Examiner	Art Unit	
	Tony Chuo	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-31 and 33-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-31 and 33-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/9/07 has been entered.

Response to Amendment

2. Claims 1-4, 6-31, 33-39 are currently pending. The amended claims 1, 13, 19, 31, and 35 do overcome the previously stated 102 and 103 rejections. However, upon further considerations, claims 1-4, 6-31, and 33-39 are rejected under the following new 112, 102, and 103 rejections.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-4, 6-31, and 33-39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application

was filed, had possession of the claimed invention. The limitation "sensing gross load current in the course of isolating each of the stacks" is not supported in the specification.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-4, 6-31, and 33-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear how the gross load current of all of the fuel cell stacks can be sensed if each of the stacks is electrically isolated so only one of the stacks is producing current.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-4, 6, 7, 9-27, 29-31, and 33-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al (JP 06-267577).

Regarding claims 1-4, 13-24, 29, 31, 33, 35, and 38, the Sato reference discloses a fuel cell system and a method of operating a fuel cell system comprising: combining the fuel cells to provide a plurality of fuel cell stacks "S1" to "Sn"; electrically

connecting the stacks in parallel to provide a standard voltage range across each of the stacks and to generate a detected output current through a load; obtaining a desired output current value "Ioi" from each of the stacks; and regulating the current produced by each of the stacks around the desired output current value by using the controller "C" to control the input valves and output valves of each stack wherein each individual stack current is individually balanced based upon the detected output current of all of the stacks by adjusting parameters such as the pressure, temperature, and concentration affecting the input and output of fuel gas and air to each of the stacks individually (See Abtract and paragraphs [0011],[0017],[0021],[0028],[0031,[0032]).

Regarding claims 6, 7, and 34, it also discloses a controller "C" that controls a first current through a first stack and a second current through a second stack wherein the second current is controlled independently of the first current and wherein the first and second currents are based upon rated capacity of each stack "Ioi" which is proportional to active areas of the first and second stacks (See paragraphs [0031],[0032]).

Regarding claim 9, it also discloses current detectors "ID1" to "IDn" that are connected for every output current of each stack to determine the gross load current (See paragraph [0022]).

Regarding claim 10 and 27, it also discloses setting up flow rates of fuel and air according to measured output current of the fuel cell stacks (See paragraph [0010]).

Regarding claim 11, 25, 26, 36, 37, and 39, it also discloses oxygen concentration means which inherently would comprise a pair of oxygen sensors that

sense oxygen consumption by each stack by determining the oxygen concentration in a cathode inlet and outlet; and determining the desired current through each stack using the determined oxygen consumption (See paragraph [0012]).

Regarding claim 12 and 30, it is inherent that the total power is adjusted by adjusting the plurality of parallel stacks.

9. Claims 1-4, 6, 7, 9, 12-24, 27-31, 33-35, and 38 are rejected under 35 U.S.C. 102(a) as being anticipated by Konuma et al (JP 2003-243008).

Regarding claims 1-4, 13-24, 27, 29, 31, 33, 35, and 38, the Konuma reference discloses a fuel cell system and method of operating a fuel cell system comprising: combining the fuel cells to provide a plurality of fuel cell stacks "3-1" to "3-n"; electrically connecting the stacks in parallel to provide a standard voltage range across each of the stacks and to generate a fuel cell power output (gross load current) that is based on the magnitude of the load; obtaining a predetermined minimum electric energy (desired set-point for current); controlling the power (current) of each fuel cell stack so that the power does not drop below the minimum electric energy by using the control unit "7" to adjust the flow rate of the fuel gas to each of the fuel cell stacks according to conditions such as temperature, pressure, fuel gas, and oxidation gas (See paragraphs [0017],[0020], [0021],[0022],[0024],[0038],[0051]). Examiner's note: By individually adjusting the flow rate of fuel gas to each of the fuel cell stack, the stack currents are individually balanced.

Regarding claims 6, 7, and 34, it also discloses a control unit "7" that controls a first current through a first stack and a second current through a second stack wherein

the second current is controlled independently from the first current; and wherein the first and second currents are controlled based upon predetermined fuel utilization rate of each stack which is proportional to the active areas of the first and second stacks (See paragraph [0042]).

Regarding claim 9, it also discloses an ammeter associated with each stack that senses the current generated by each stack which is used by the control unit to determine the fuel cell power output (gross load current) (See paragraph [0038]).

Regarding claim 12 and 30, it is inherent that the total power is adjusted by adjusting the plurality of parallel stacks.

Regarding claim 28, it also discloses stopping the fuel cell stack 3-n for reasons of failure by implicitly stopping the fuel gas and oxidation gas to eliminate a current through fuel cell stack 3-n (See paragraph [0049]).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 8 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al (JP 06-267577) in view of Dickman et al (US 2001/0049038). The Sato reference is applied to claims 1 and 19 for reasons stated above. However, Sato et al does not expressly teach a contactor connected between one of the stacks and the load

and a method of controlling power to a load supplied by a plurality of fuel cells comprising controlling at least one input to a given stack to eliminate a current through the given stack. The Dickman reference discloses a contactor "100" for isolating a fuel cell stack from the applied load and a method of interrupting the flow of hydrogen and air to a particular stack so that the stack does not produce electric current (See paragraphs [0059],[0061]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Sato fuel cell system to include a contactor connected between one of the stacks and the load and a method of controlling power to a load supplied by a plurality of fuel cells comprising controlling at least one input to a given stack to eliminate a current through the given stack in order to increase the lifetime of the stacks by isolating one or more stacks during periods when power consumption is at a minimum.

Response to Arguments

12. Applicant's arguments with respect to claims 1-4, 6-31, and 33-39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571) 272-0717. The examiner can normally be reached on M-F, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

J.C.Y

JONATHAN CREPEAU
PRIMARY EXAMINER